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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,133

06/27/2003

Masuhiko Natsuhara

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1132

29453

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11/14/2006

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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/604,133

Applicant(s)

NATSUHARA ET AL.

Examiner

Ram N. Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/15/2006.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/21/2006 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.**

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In this instance the newly added limitation in claim 1 of "the electrodes having a length of at least half the diameter of the wafer carrying surface" is a new matter. The specification, even though it may show an occurrence of a certain length of electrodes and wafer holder diameter, which would satisfy the claimed relationship, does not disclose this relationship as axiom. Applicant's characterization of this single occurrence as an axiomatic generalization is improper. Further, it is possible to find

Art Unit: 1763

electrodes of length, which do not conform to claimed relation ship but perfectly conform to invention as stated in abstract and summary of invention.

Further in claim 5 recitation of "heat capacity of each of the plurality of electrodes is 1% or less....." is also a new matter.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

In theses claims the new limitation of electrode length is indefinite since the two ends of this length are not known with certainty. One end of the electrode (a wire to connect power to the electrical circuitry) is to be connected to the circuit but the other end connected to the source of power may be at unknown distance.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1763

**5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araki et al (US 6239402) in view of Ohashi et al (US 6261708) as evidenced by Soma et al (US 5231690) and also further in view of Yasutaka Ito (JP 2002-249377).**

Araki et al disclose an Aluminum Nitride based wafer holder for semiconductor manufacturing device (Fig 8) with a shaft (28) or wafer holder (Fig 9) with a shaft (34) and an electrical circuit formed inside (7 for resistive heating and 9 for plasma) and electrodes for supplying power (12, 13 and 14). The heat capacity of the electrodes could be fairly estimated to be less than 2 J/gK, since compared to the claimed invention the wire (electrodes) number is 3 and length less than 40mm.

This estimation depends upon the typical diameter of power supplying electrodes being 4mm. Typical diameter as taught by Soma et al is 2mm (Col 6 lines 7-10). It may be fairly estimated that even if the diameter is several times that of Soma et al the heat capacity of electrodes will not be more than 5 J/gK.

The heat capacity of the wafer holder however could be fairly estimated to be more than 350 J/gK for wafer holder of Fig 9 and much larger for the wafer holder of Fig 8. Therefore the heat capacity of the electrodes of the disclosed wafer holder would be much less than 10%.

Further Araki et al do not disclose the degree of roughness of the surfaces of the shaft and the wafer holder.

Ohashi et al teach a method of joining a shaft and a wafer holder and teach that respective surfaces are smoothed to less than 2  $\mu\text{m}$  (Col 10 lines 22-28) for airtight joining.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have smooth joining surface for a good joint.

Regarding the limitation of the electrodes length, in this instance electrodes are understood to be the conductor from the electrical circuit to the power supply and would be configured according to component placements and process needs and would therefore be obvious to be optimized.

Further, references disclosed by the applicant in IDS specially Yasutaka Ito, recommend low heat capacity (Paragraph 9-10) and explain that large heat capacity increases the amount of heat required to raise the temperature. Therefore it would be obvious to optimize the heat capacity of the electrodes with respect to the wafer holder since regions with large heat capacity will have less comparative temperature and low temperature uniformity.

#### ***Response to Arguments***

Applicant's arguments filed 9/21/2006 have been fully considered but they are not persuasive.

Applicants new limitations are addressed in the rejection as discussed above.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar  
Primary Examiner AU 1763